BACKGROUND FOR EDITORS

DIGITAL'S EDI DIRECTION -- MEETING TODAY'S NEED FOR STRUCTURED ELECTRONIC COMMUNICATIONS BETWEEN ORGANIZATIONS

Electronic Data Interchange (EDI) is a topic receiving much attention today in trade journals, conferences and in board meetings around the world, and with good reason. As many as 75 percent of the Fortune 100 companies and 39 percent of the Fortune 500 companies use EDI as an exciting extension of technology that is helping them respond to today's global economy and rapidly changing competitive environment.

While the precise definition of EDI may vary, it is, essentially, the electronic exchange of structured business data including purchase orders, invoices and acknowledgements between an enterprise and its customers, suppliers, subsidiaries and other trading partners. Although EDI information differs in structure from generic correspondence such as electronic mail, EDI information can be transferred over the same communications networks that carry electronic messages within and outside an organization.

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Today's Business Environment

In today's business environment large numbers of people key information into computer systems. In many cases, this process results in hard copy documents. In the traditional paper-based purchasing system, for instance, purchase orders are generated, printed and sent through the postal service to the appointed vendor. Upon receipt, the vendor re-enters the information into his or her order entry system. This transaction method often results in human errors and business delays of two weeks, or more. (Fig. 1)

With EDI, the order is formatted into a computer-readable format and either transferred to a Value Added Network (VAN) or sent over direct lines established between the partners. The order is then transferred to the vendor's EDI application, which coverts the information into a form that is readable and usable. Through this process, cycle times are often reduced from two or three weeks, to two or three days producing higher inventory turnovers, faster response and improved service.

Moving From Isolated To Integrated EDI Systems

Many of the early, or first generation, EDI implementations were done simply as paper replacement systems. Computers ranging from PCs to mainframes ran EDI applications with little or no integration with the business applications which provided the information to be communicated to external trading partners. (Fig. 2). Many first generation EDI systems are still in use today. In this environment, users typically key data into the EDI application and transfer it to their trading partner's computer either via a VAN or through a direct communications link. Information is typically received back in the same way, then printed out and re-keyed into the appropriate business application.

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While implementing EDI in this manner provides a relatively low start-up cost, the real benefit of EDI cannot be realized in this manner. First generation EDI implementations demand significant human intervention, continue to facilitate re-keying errors, and do not significantly improve productivity or reduce costs. Most significantly, first generation EDI implementations do not provide for integration with the users' business applications across the organization and, thus, do not allow businesses to improve relationships with trading partners.

Second generation EDI solutions, on the other hand, are now being designed and implemented to enable users to integrate EDI software with their commonly used business applications, including finance, purchasing, manufacturing, distribution, sales and marketing (Fig. 3). When implemented in this manner, it enables users to have "EDI-ready" business applications In this environment, EDI functions as an extension to the integrated business applications, as a fully integrated business solution providing significant benefits across the enterprise.

The Role of Standards

Because enterprises buy computer systems to meet specific needs, not necessarily to match electronic compatibility, many global computing environments tend to be heterogeneous. The challenge of EDI is to connect these systems together in a compatible fashion across organizational boundaries. Most vendors can tie their own computers together through some form of network; however, to join together many systems from many manufacturers it is necessary to have adherence to standards.

In 1985, Digital acknowledged the International Standards Organization's recommendations on open system interconnectivity as the best way to ensure the interoperability of multi-vendor systems. Open Systems Interconnect (OSI) is a set of standards being developed by the International Organization for Standization (ISO) for use on a global basis in the computer and information processing environment. These standards will allow computers from various vendors to communicate with one another by using defined international protocols, and reduce the compatibility problems typically associated with integrating and managing multivendor networks. OSI standards will allow integrated solutions to communicate both internally and externally with customers, suppliers, and strategic partners; and they will provide the basis for high speed computing through homogeneous, peer-to-peer data communications.

Current Digital OSI focused networking products will be complimented by additional OSI functionality with the future release of Digitals' DECnet/OSI Phase V networking software. Overall, Digital is adapting to OSI standards with its Digital Network Architecture (DNA) to provide a more robust enterprise network environment using the overall functionality of both DECnet and the OSI in applications such as EDI and electronic mail.

EDI standards define a structure for the message envelope that surrounds the data to be transmitted, a structure for the message fields and content, and communications links to external computers. In the U.S. and Canada today, ANSI X12 and TDCC are the leading EDI standards being used by most corporations. EDIFACT, the international EDI standard, is gaining significant acceptance, particularly in global organizations.

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These standards are being adapted by industry groups to meet the needs of their industries. For example, in the United States they include standards such as CIDX for the chemical industry, EIDX for the electrical industry, WINS/UCS for the grocery and warehousing industries; in Europe they include CEFIC for the chemical industry, ODETTE for the automotive industry, and EDIFICE for the electronics industry.

Digital's worldwide EDI offering will support these and other standards.

Digital's EDI Offering

EDI plays a critical role in Network Application Support, Digital's strategy for delivering the unified software environment for the 90s. NAS comprises a comprehensive set of application services that allows software applications to integrate well with one another across a distributed environment of multi-vendor systems. These services are based on existing and emerging industry standards. Applications and solutions built using NAS services answer users' needs for accessing, communicating, and sharing information and resources across a network of different desktop devices and server systems.

In addition to implementing EDI within its own organization, Digital is also a provider of EDI application services to the marketplace. In August of 1988, Digital announced the availability of VAX/EDI, the first software product to provide VAX users with a complete EDI capability to exchange data over the INS Tradanet VAN in the United Kingdom. Digital has also publicly committed to provide worldwide, second generation EDI application services.

Digital's first worldwide EDI offering is being developed today to meet the growing needs of our customers for the integration of computer applications between enterprises. Digital has identified these needs while developing its own system, building customized EDI systems for customers, and listening to what customers say they want and need.

For example, Digital has learned that customers want EDI to be easy to use, implement and maintain on a global basis, because large numbers of corporations have worldwide trading partners. They also need EDI implemented in a distributed computing environment, permitting them to start small yet grow the EDI solution as they grow -- what is often called "scalability".

They need EDI to operate efficiently in a multi-vendor and multi-VAN environment -- bringing data to and from applications on multiple platforms, translating it, and receiving and sending data to the VAN of their choice. They need to support national and international EDI standards, as well as widely used and accepted communications standards such as X.400. They need systems which provide end-to-end management tracking and routing of EDI data in a secure environment. And, they need a wide range of consulting, implementation, and support services to help implement EDI successfully. Digital's EDI application services are being designed to support these needs.

Modular Design for Flexibility

Digital's EDI application service offering will consist of three independent software modules: the Communications Service Module, the Translation Service Module, and the Applications Service Module. Additional software will provide for the end-to-end management, auditing, tracking and routing of data across the system regardless of whether the modules are located on one or many computer systems. (Fig.4)

How an organization implements EDI will strongly be influenced by their business need, applications environment and hardware systems. Each of these modules will be designed to reside on a single VAX computer or distributed across multiple VAX computers. This unique architecture provides maximum flexibility to accommodate changes as the business grows and changes. EDI data will be moved from module to module and to business applications using Digital's DECnet/OSI networking software or by Digital's MAILbus electronic messaging capabilities. (Fig. 5)

Digital's EDI application services will also be able to use information from applications residing on host computers from various vendors located on the network. For example, by using Digital's existing IBM interconnect products such as the DECnet SNA Gateway, organizations will be able to transfer data between applications on an IBM system and applications on a VAX. This information will then be accepted by the EDI software, translated into the appropriate standard format and communicated to the trading partner or subsidiary.

The Communications Service Module will act as the interface to the external communications environment and serve as the gateway for sending, receiving and logging of EDI data or documents with trading partners. The Communications Service Module will enable EDI communications either through a VAN or direct with trading partners and will provide extensive scheduling capability to carry this out in a timely and cost effective manner.

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The Translation Service Module will provide the translation and management functions for the conversion of data from an organization's internal data format standard to an external EDI standard, such as EDIFACT and ANSI X12, and back to the internal format.

In addition, the translation service module will notify the system managers that the data sent or received is in compliance with the standard agreed to by both trading partners. This module will also generate functional acknowledgments and log the status of all processed documents, providing an audit trail as data moves through the system. The translation service module will also provide the capability to create and use specific message formats that are unique to specific trading partners.

Most EDI products on the market today only provide a translation software functionality. In addition to broad based translation and flexible communications capabilities, Digital's EDI application services will have a separate component for the integration of EDI with an organization's business applications.

The Applications Service Module will provide applications developers with the tools to facilitate the transfer and routing of data between applications -- such as finance, purchasing, manufacturing, distribution, sales and marketing -- and the translation module. More specifically, this module will provide a set of callable routines which the application programmer can use to facilitate the transfer and sending of outbound documents to the Translation Service Module, and process inbound documents to the business application. And, as with all modules, the application service module will log the status of each document processed.

EDI Consulting and Support Services

The EDI services discussed to this point represent services used by computers to help organizations communicate EDI data. In addition, Digital will offer a second type of EDI services -- those services which are used by people to help people implement EDI successfully.

A successful EDI implementation goes far beyond a limited set of technological issues and problems. In planning and implementing an EDI solution, fundamental strategic issues must be addressed, such as how an organization wishes to run its business or gain competitive advantage by executing a business communications strategy within and beyond the boundaries of the enterprise.

Digital recognizes the desire of customers to have a single vendor assume the responsibility for assisting in the design and implementation of an EDI solution. Digital will provide a complete spectrum of customer training and support services which encompass planning, design, implementation and management.

Digital's planning and design services will assist an organization in developing a complete EDI implementation strategy. This includes an analysis of current systems and environment, how to establish trading partner relationships, understanding potential impact on human resources, and helping launch initial EDI pilots and plan an EDI rollout strategy.

Digital's EDI services will also help to successfully integrate current applications into the EDI environment, select and set up the appropriate EDI standards for each trading partner relationship, and establish the necessary links between an organization and its trading partners, either through a Value Added Network or directly.

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Finally, Digital will assist in the management of the multi-vendor network and communications environment, and help update their EDI software to conform to EDI standards as they evolve.

Summary

Digital is fully committed to providing added value application services and implementation services to meet customers' worldwide EDI needs. Digital will provide a single worldwide application service with a distributed architecture, which supports international and national EDI standards across the wide range of VAX computers. The EDI services are being designed to facilitate small or large scale deployment as business, not technology, dictates. And, they will allow organizations to either connect directly with its trading partners or through the VAN of its choice.

Finally, but equally important, Digital's EDI application services will provide end-to-end management, auditing, tracking and routing of data across single or multiple computer implementations. And, adding to the completeness of its EDI offering, Digital will also provide a full complement of consulting and support services to move customers beyond the technical and in to the significant business issues of successful EDI solutions.

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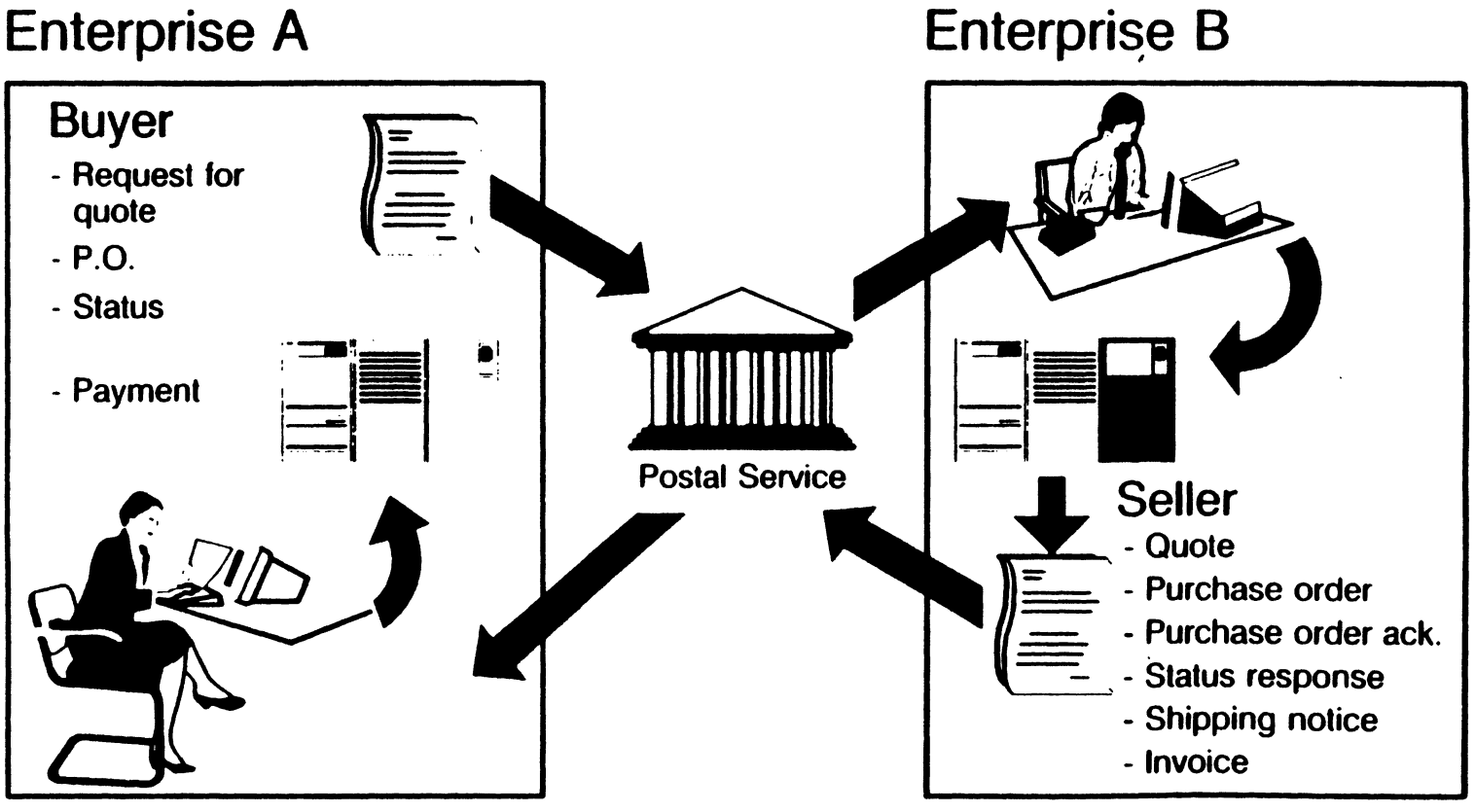
The Business Problem



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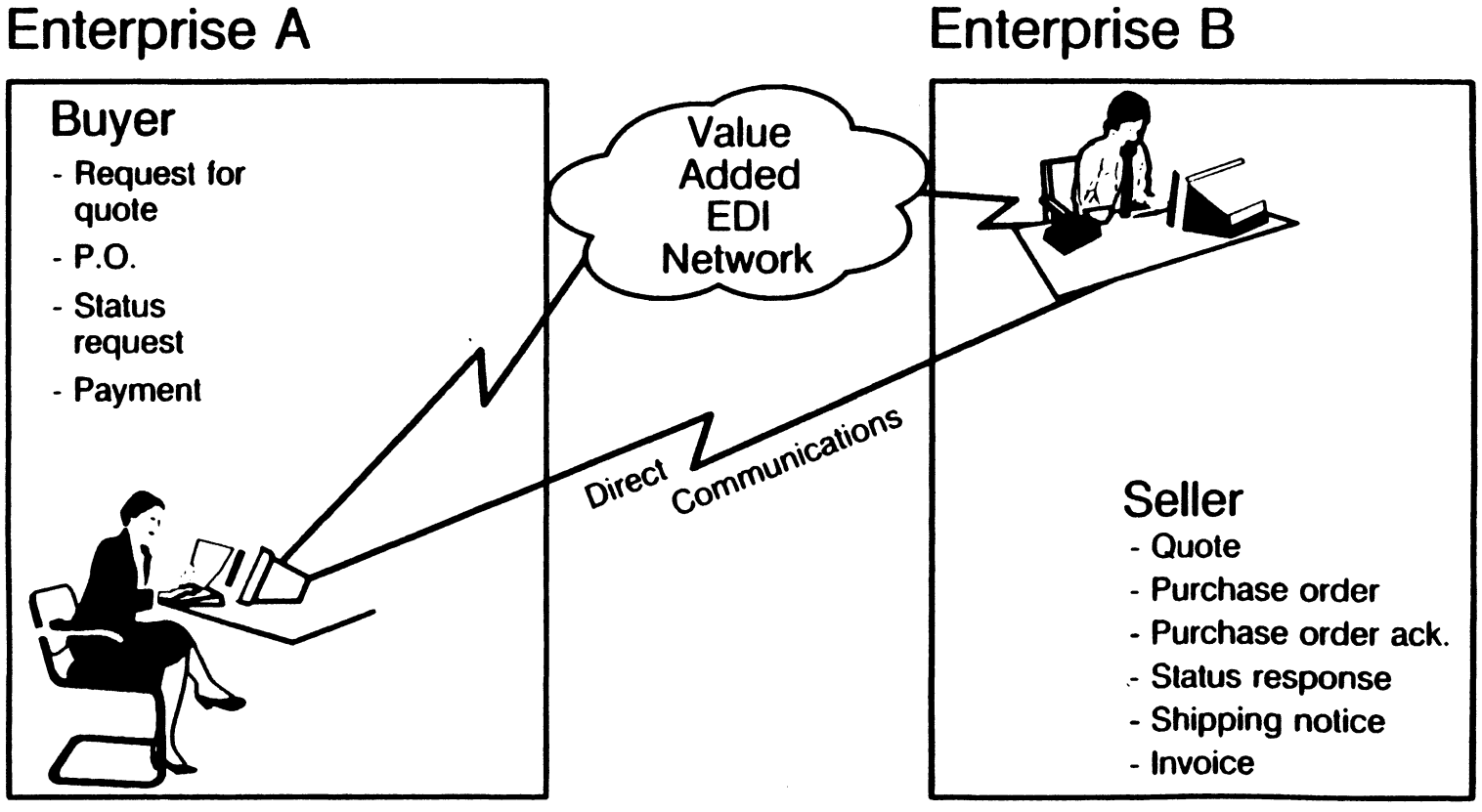
(Figure 1)

First Generation EDI Solutions



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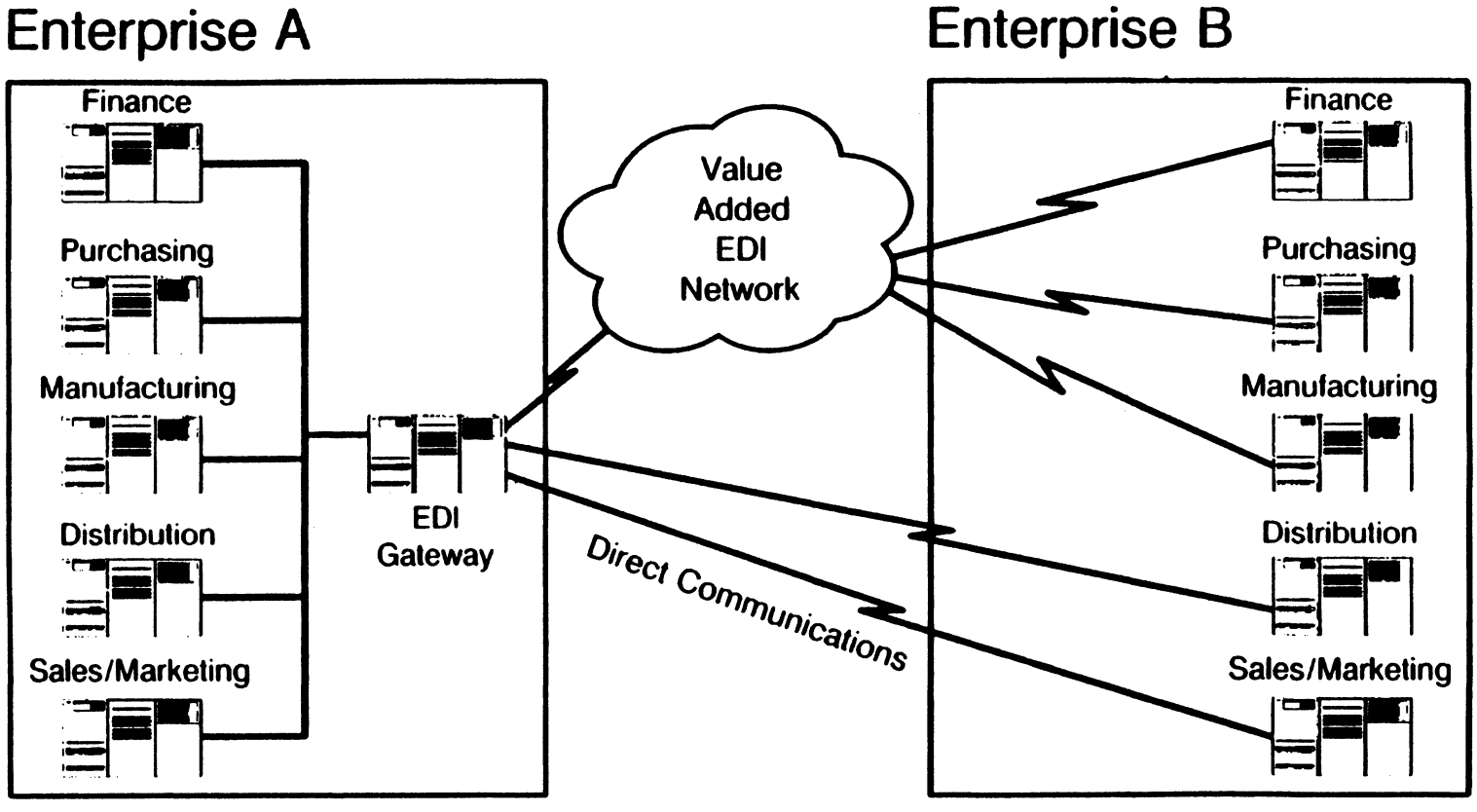
(Figure 2)

Second Generation EDI Solutions



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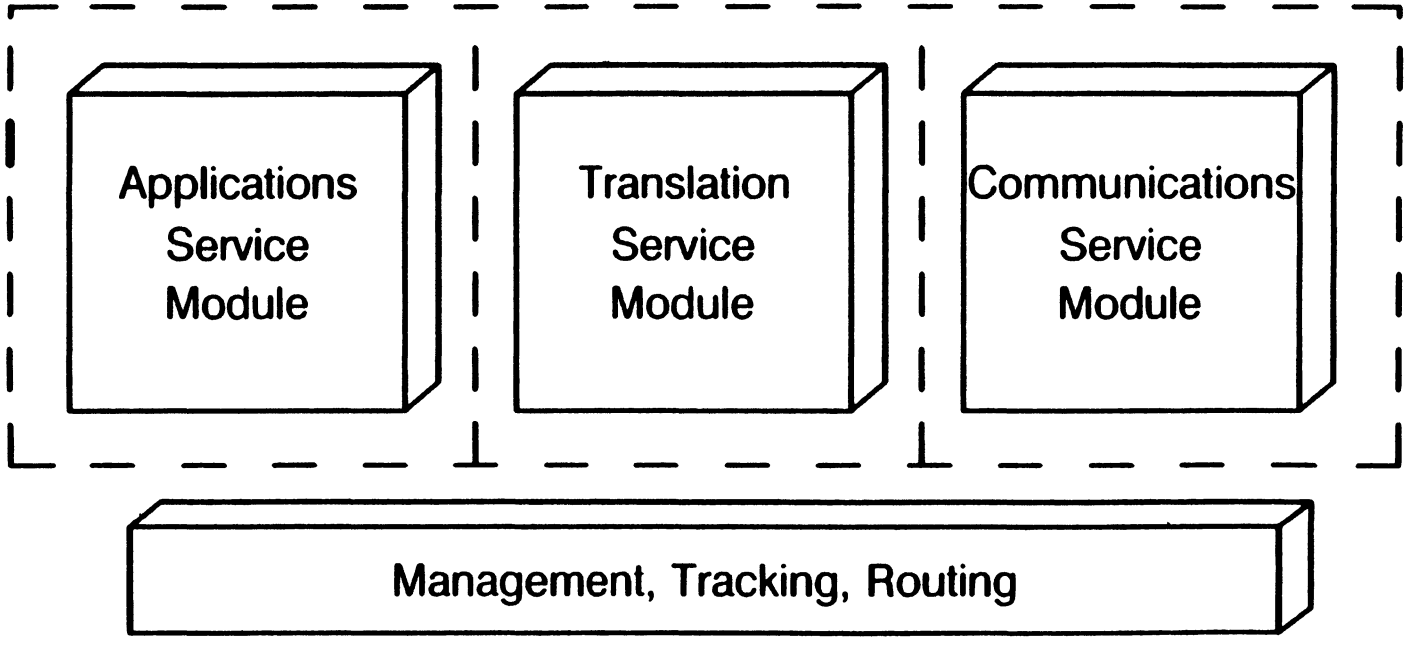
(Figure 3)

EDI Architecture

Providing a Flexible Modular Growth Path



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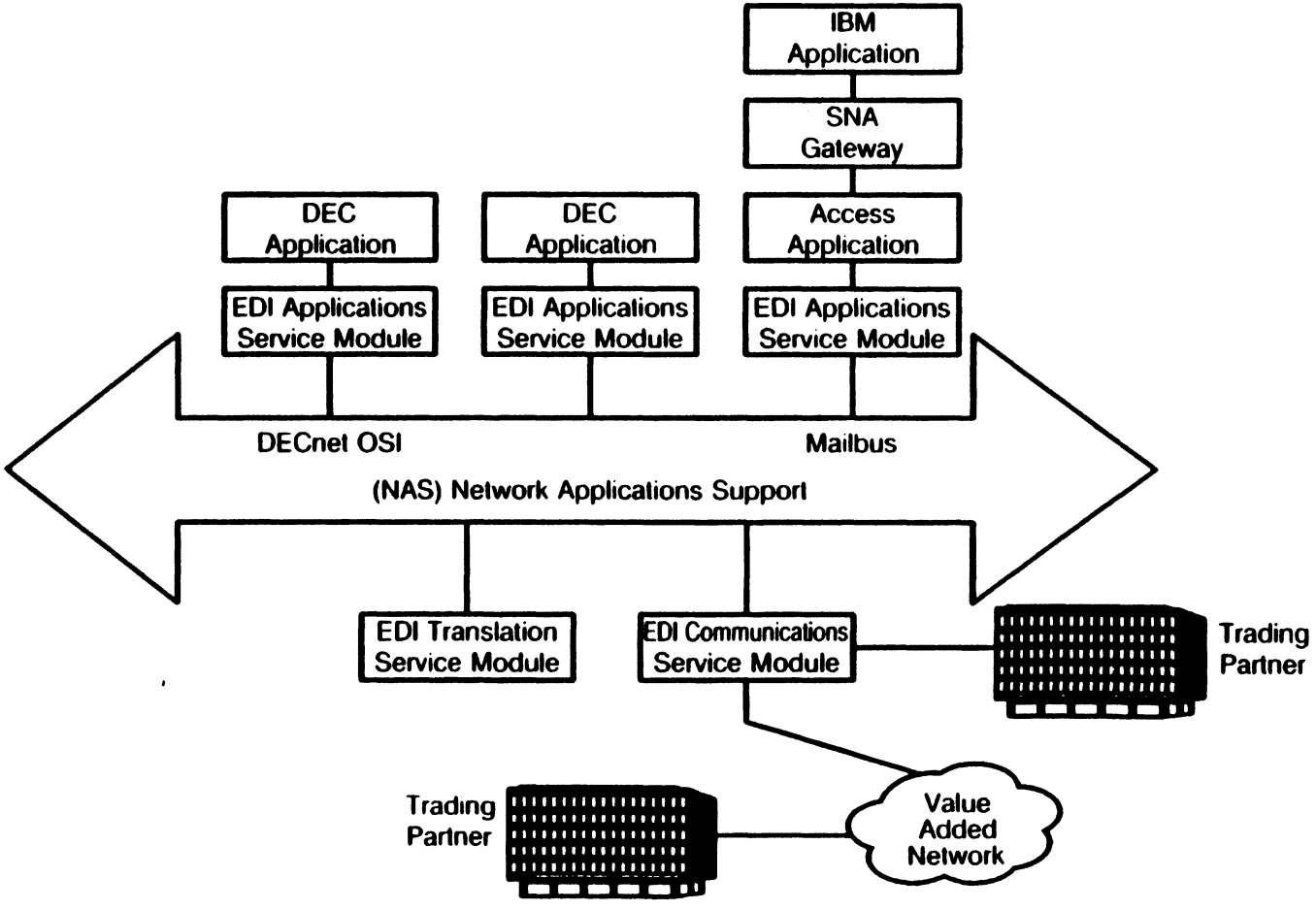
(Figure 4)

EDI Architecture



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(Figure 5)